The HIGH SCHOOL JOURNAL

Vol. XXXI MARCH-APRIL, 1948 No. 2

Secondary Education—Inclusive or Exclusive?

FLORENCE TAYLOR

Assistant Secretary, National Child Labor Committee

PENNSYLVANIA'S compulsory attendance law, which requires attendance to 17 years of age except for children 16 and legally employed, has recently been under attack in Philadelphia. Criticism of policies and methods adopted in the Philadelphia schools, in an effort to meet the needs of all children, developed into a public controversy of sizeable proportions when two judges joined the attack on the city school program. According to the judges, the problem of "non-academic" students and the "slow learners" in the high schools is the result of raising the compulsory school age from 14 to 17 and they advocated dropping the compulsory attendance age back to 14 and turning out into the labor market the children who are not qualified for the regular academic work of the high schools. Although the judges won little support from responsible citizens for a return to a 14 year standard of compulsory education, their attack inevitably added to the confusion in the minds of the general public as to how the problem of educating all children of high school age could and should be solved.

In Philadelphia, as in other American cities, a genuine attempt has been made to meet the wide range of abilities and interests which characterizes the high school population of today. The enormous increase in high school enrollment during the past few decades has completely changed the composition of the high school student body throughout the country. This change is the result of the American democratic concept of free education and of economic progress, both of which have contributed to a rising standard of education for the population as a whole.

To lower the school attendance age to 14 or to adhere to an academic curriculum would reverse democratic progress in education. An 8th grade education has become a completely inadequate standard and it is nothing short of defeatism to say that America is not capable of devising educational programs above the elementary school level which will provide all young people with

Boston University
School of Education

four additional years of education of a kind that will help them to develop into reasonably intelligent and mature workers and citizens.

Educating all our young people of high school age according to their needs and capacities inevitably takes more dollars than putting them all through the same educational mill and tossing out the misfits into the labor market. The public must realize this, since they will be called upon to supply the dollars. Teachers and parents must understand the need for differentiated programs in order to cooperate in making them successful and to assist the public at large to understand them.

Which is more costly in the long run—letting children fail the same grades over and over until they reach 16 and then turning them loose completely unprepared—and in many cases with feelings of frustration and defeat—to make their way in the world the best way they can, or providing programs geared to their speed and ability in which they can move along and develop to the limit of their capacities? It is the latter and more constructive approach which the Philadelphia schools have endeavored to implement, so that students could be helped to progress and develop instead of being held behind rigid grade barriers until they leave as failures. Students are grouped by chronological age, rather than by grades, and efforts are made to adjust programs to levels of student ability. This has given rise to criticism both within and without the school system which has become more vocal since the end of the war—and which the judges touched off in their public attack—because decreased employment opportunities for young people are beginning to show in increased enrollments. In December, 1943, there were 22,000 16- and 17-year-olds employed full time in Philadelphia and in December, 1947, there were 9,792. The high school population rose from 39,700 in 1935 to 52,500 in 1940 as a result both of higher compulsory age requirements and of lack of jobs, fell during the war when jobs were plentiful, and is now back to 44,000. This increase inevitably produces an increase in the number of non-academic students who cannot do "regular" high school work since it is these students who are usually the first to leave for jobs if they can get them. Complaints that students are passed along under the chronological age system of placement who can not or will not work, and that graduation from high school no longer means anything as students are not required to meet any standards, come from teachers harassed by oversize classes and by lack of facilities for individualized programs, and from those among the general public who fail to realize that the

trouble lies, not with the educational objective, but with insufficient funds.

The problem of retarded students in the schools of large Northern cities has been greatly increased by in-migrations from the South which were stimulated by war employment but which will undoubtedly continue on a large scale. One of the most effective arguments in the wealthier states for federal aid to education, to which some of these states object because they would be taxed to raise the standard of education in the Southern states, is that migration brings large numbers of inadequately prepared children from the South into their schools. Obviously children 14 to 17 years of age, who are retarded through no fault of their own, should not be placed in classes with 7 and 8 year old children. To group them in remedial classes by age and to provide special instruction is the only answer and it is a costly answer for the cities to which these children come.

The Philadelphia schools need more money to carry out their program of educating all children of high school age up to the limit of their ability, not a return to a system of secondary school education for which only a select few are qualified. A Special Committee of the Board of Education, which was appointed to study criticisms of the placement policy and which held open hearings to bring out all points of view, outlined the following needs for successful operation of the program in its Report to the Board which was approved last November, all of which require more funds:

a. More teachers for regular and remedial classes. The financial statements of the Board of Public Education published December 1, 1944, and December 5, 1946, pointed out as one of the significant needs of the schools a reduction in class size.
b. An adjustment teacher for every elementary and junior high school and more than one for larger schools. At present only sixty-four schools have adjustment teachers.*
c. An expansion of the testing program.
d. A reinforcement of the psychological examining service.
e. Adequate supplies and equipment.
f. More text and reference books.
g. Increased and improved building facilities.
h. Wider use of school buildings.
i. More adult education.

The following excerpts from the Committee's Report state the problems and the solutions which are sought:

It will have to be realized that the picture has changed definitely in the American high school. This does not mean that adequate knowledge of sub-

*There are 222 public schools in Philadelphia.

ject matter is unimportant, or that academic curriculums have been abandoned, or that there is not need for including an academic preparatory education for thousands of our youth. It does mean, however, that all youth, and especially the thousands of non-academic youth, require a kind of education very different from that for which a large proportion of high school teachers and administrators were trained. However, it is heartening that so many have made the necessary adjustments as evidenced by the developments in broadening the high school curriculums so extensively in our own and thousands of other high schools throughout the whole country.

Indication of this broadening of program in the secondary schools of Philadelphia is found in many activities and procedures. Some of these are (1) the school-work program, (2) education for home and family living, (3) programs of general education, (4) distributive education, (5) objective testing and self-appraisal programs, (6) parallel classes, with groups rostered for the same subject to different teachers at the same time and with adjustments being made in such a way that one will carry on an accelerated program and the other a program based on immediate practical experiences, and (7) ability grouping, in which subjects are offered at higher or lower levels of speed and difficulty and in which pupils are assigned to one group or the other according to ability not necessarily determined by intelligence quotient.

But much remains yet to be done. Basic to further progress is the adaptation of state certification requirements and through this adaptation the broadening of the kind of teacher preparation offered in colleges. In-service courses should be developed to assist teachers in meeting the demands made upon them by this newer type of work.

It is the judgment of your Committee that the difficulties encountered in pupil placement, and the criticisms which have resulted from these difficulties, are not due primarily to the philosophy and method of placement, but chiefly to the lack of personnel and facilities. Better work could be done in the Philadelphia school system if we had smaller classes, more remedial and adjustment teachers, and adequate facilities in the way of buildings, supplies, text and reference books, and equipment. But it must be realized that the Board of Education is limited in the amount of money that it can spend for these purposes. The Committee believes that gradual progress is being made in the improvement of our school system, but the solution of such major problems as we are discussing in this report depends fundamentally on securing more adequate financial resources to meet the needs involved in personnel, buildings, and equipment. While we push forward to make whatever progress we can, we must at the same time drive vigorously and with determination towards securing the necessary financial support. It must be realized by all who are interested in the efficient education of our children that more money for the school is essential.

The Committee believes that there has been, both within and without the schools, a lack of appreciation of the objectives of the school system and of the changed conditions which must be met when the school system is faced with providing universal education. Improvements in the school system will come, not from a return to the old system which strives to make every pupil, no matter what his intellectual capacity, conform to certain grades or leave school, but will come from a clearer understanding of the problem now facing the schools on the part of the whole school personnel and the parents

and a willingness on the part of the public generally to provide the necessary additional funds.

The Public Education and Child Labor Association, a private agency devoted to the interests of Pennsylvania's children in school and at work, which supports the program of universal education the Board of Public Education has been endeavoring to provide in the Philadelphia schools, said in a statement at one of the open hearings before the Special Committee:

> The challenge of the modern high school is to explore and use visual education methods, work experience, and community facilities and agencies in a manner undreamed of by the high school of yesterday. The traditional academic high schools to which we commonly ascribe the word "best" are doing the easiest of all teaching jobs. The high schools which really deserve our accolades are those which develop the staff and curricular differentiation required to serve the children of all of the people.

The situation is one which confronts all secondary schools—and the tax paying public—and one which is particularly acute in the overcrowded schools of the large cities. Some states would do well to think what they can do to meet the educational needs of children under 16 before they raise the compulsory education age to 17. States like Pennsylvania, which have the funds to adapt secondary education to the needs of all children of high school age, should move forward by making the funds available and forestall the danger of being stampeded into a retreat.

An Early Educational Fad in the South

EDGAR W. KNIGHT
Kenan Professor of Education, University of North Carolina

MOST if not in fact all educational theories and practices in the American colonies came naturally from the mother country and a few theories and practices came from England to this country after revolution and independence. Among these was the monitorial system of educational organization and instruction which in the early part of the nineteenth century attracted considerable attention, especially in the larger towns and cities, and is said to have stimulated interest in the idea of public education. Briefly, this was a method of "mutual instruction" by which the older and better informed children as "monitors" instructed the younger and less well informed children. Under such a device it was claimed that one teacher could supervise and direct the instruction of several hundred children and reduce the cost of their education; and the routine of school management and teaching was said to be so organized as to save time also.

The monitorial system had many friends in the South. In 1814 the editor of a North Carolina newspaper[1] congratulated

> . . . our fellow-citizens on the prospect of establishing in the Preparatory School of our Academy, the highly approved mode of teaching children the first rudiments of Learning, invented by the celebrated Joseph Lancaster of London, by which one man can superintend the instruction of any number of scholars from 50 to 1000. At the monthly meeting of the trustees of the Academy on Saturday last, a favorable Report was made by a Committee who had been appointed to consider this subject, from which it appears, that when this plan shall be introduced, the children of all such parents in the city and neighbourhood as are unable to pay their tuition, may be taught without additional expense, so that this institution will answer all the purposes of a Free School.
>
> The report was unanimously accepted, the sum of $200 was promptly subscribed by the trustees, and the editor expressed the view that a sufficient fund would be raised immediately to send "a fit person to the District of Columbia (where there is a school of this kind in operation under the direction of one of Mr. Lancaster's pupils)[2] to receive the necessary instruction, and return

[1] *The Raleigh Register*, April 1, 1814.
[2] This was Robert Ould, who seems to have done very well for himself "in fees for training Teachers." But it appears from a letter by Lancaster October 26, 1819, to his daughter Elizabeth in Philadelphia, that it was very difficult for Lancaster, who was often in financial difficulties, to borrow money from Ould.

hither for the purpose of undertaking the contemplated School, which it is proposed shall open with the ensuing year." Those benevolent people who were willing to help in spreading the benefits of education "amongst the poorest classes of the community" were requested to express their interest by placing their names to a subscription paper in the hands of the treasurer of the academy.

Another Raleigh newspaper[3] later announced that "Mr. Lancaster's celebrated mode of teaching the elements of the English language will go into operation in the Preparatory Department of the Raleigh Academy on Monday next." And a few weeks later the secretary of the trustees of that academy wished "it to be generally known, that the new and highly approved Plan of teaching the first Rudiments of Learning, invented by the celebrated Joseph Lancaster of England, is now in operation in their Preparatory School . . ." Among the "great advantages" claimed for the scheme was "that a Teacher can instruct any number of Children that his School Room will hold; Children are taught the Rudiments of Learning in a much shorter time than in the usual way (the youngest learning to read and write at the same time); it is much cheaper than the old mode, the price being $10 a year only, and no Books are required . . ." Children of indigent parents would be received without expense. No one except the trustee to whom an indigent would apply and the treasurer of the academy "(not even the Teacher) knows which of the Scholars are paid for and which are taught gratis."[4]

Two years later Archibald D. Murphey, "the father of public schools in North Carolina," in his distinguished report to the General Assembly of that state, recommended the monitorial scheme for the primary schools proposed in that report and believed it could be successfully introduced also to the academies and the university. President Joseph Caldwell, of the University of North Carolina, in his "Letters on Popular Education, Addressed to the People of North Carolina" in 1832, looked with high favor on the work of Bell and Lancaster. The same year the Lancasterian system was proposed for North Carolina but was not adopted by the General Assembly.

Greater interest in Virginia than in North Carolina in the Lancasterian monitorial organization may have been due in part to the fact that Lancaster spent considerable time, lectured and

[3] *Raleigh Star*, February 10, 1815.

[4] *The Raleigh Register*, March 17, 1815. In the *Raleigh Star* of November 17, 1815, William Hill, secretary of the trustees of the Raleigh Academy, made a report on its use of the Lancasterian methods and stated that about 200 pupils had attended during "the late session of the Academy. A large portion of these were young ladies, not only of this, but of several of the Southern States. . . ."

engaged in a somewhat extensive correspondence in the Old Dominion and with Virginians. He had come to the United States in 1818 on account of his own ill health and financial difficulties, the mental sickness of his wife, and disappointment over his educational operations in England where he had been involved also in a controversy over the question of priority in the invention or discovery of the "mutual instruction" of pupils, or monitorial method, to which Andrew Bell,[5] Anglican divine, or his friends for him made high claims. Lancaster, a Quaker, had his friends also. Rivalry between the Anglican and the Quaker groups naturally developed over the claims to priority in the discovery of the novel method of educational organization for which both Bell and Lancaster and their zealous supporters urged promises of wonder-working powers. For example, Bell made the very lofty pedagogical claim: "Give me 24 pupils today and I will give you back 24 teachers tomorrow." And Lancaster's claims and promises were certainly not unduly modest. One of these was that under his system

> One master (often a lad from fourteen to eighteen years of age) can be rendered competent to the government of a school containing from 200 to 1000 Scholars. The expense of Education for each individual will also diminish in proportion as the Number under the care of the same Master increases.
>
> The System of Order and Tuition serves in lieu of experience and discretion in the Teacher, whose qualification constitutes only a small degree of Elemetary Knowledge. Five hundred children may spell at the same time. A whole school, however large, may read and spell from the same book. The Master will be wholly relieved from the duty of Tuition and have for his charge that of frequent inspection of the Progress made by the Pupils.[6]

If one can judge from his correspondence, there was wider interest in Virginia than elsewhere in the South in Lancaster's method. In the library of the American Antiquarian Society, Worcester, Massachusetts, are at least a dozen large folio boxes containing the papers of Joseph Lancaster in which are many letters from southerners to Lancaster while he was in this country and particularly

[5] Bell, like many another young Englishman, in 1774 at the age of twenty came to Virginia as tutor in the family of Braxton Carter, Revolutionary statesman, one of Virginia's signers of the Declaration of Independence, and grandson of "King Carter." Bell had as tutor £200 a year, remained in Virginia until 1781 and Braxton thought so well of him that he intrusted two sons to Bell who took them to England "to be fixed in some genteel academy." Bell "brought his pupils to London, and they took lodgings in New Bond Street. What was then called 'quality' seems to have been their chief end in life. Their eldest brother had had a run of eighteen months on the Continent, and had, says Bell, 'returned quite the man of fashion, possessed of the graces.' This fashion, and these graces, were destined to give Bell a good deal of trouble. What with 'the unremitting kindness,' as regards money, of Mr. Braxton, the idleness and disobedience of the lads, Mr. Bell was at length obliged to give up the work, and to send in his resignation to their guardians." J. M. D. Meiklejohn, *An Old Educational Reformer, Dr. Andrew Bell.* Edinburgh and London, 1881. Pp. 14, 16.

[6] The Lancasterian fad also provided one of the earliest examples of classroom "escapism" by teachers.

while he was giving lectures and trying to collect fees for them in Virginia. Among these letters is one from John C. Calhoun, Secretary of War, on the subject of using the monitorial system in schools for the education of Indian children. There are several letters from John H. Hall written from Harper's Ferry on the subject of the monitorial method; W. F. Shackleford, of Charleston, South Carolina, wrote Lancaster that your name "is as familiar to me as the names of Washington, Locke, Newton, Jenner, or any other benefactor of mankind" and requested published material on Lancaster's plan of teaching; Elisha Wales wrote at length from Petersburg, Virginia, expressing high confidence in Lancaster's plan and enclosing copy of a letter which Wales had written to the mayor of Petersburg urging the adoption of the monitorial system in that town; Robert Bolling and Ebenezer Thomas each wrote Lancaster from Petersburg endorsing Elisha Wales as a suitable man to be instructed in Lancaster's mode of education; Lancaster appealed to Governor Thomas Mann Randolph for aid in publishing a book and Randolph replied "as President of the Board of the Literary Fund of Virginia," from which Lancaster seems to have sought some financial assistance for publication, but the governor did not commit himself to support the undertaking. Linn Banks of Richmond seems to have been an advance subscriber to the book which Lancaster was trying to get published and said "every friend to the human family should ardently wish" success to Lancaster's "laudable design." Mr. Burwell Bassett, one of Virginia's representatives in Congress also stood up for Lancaster and seems to have solicited subscribers for the publication. It was Representative Bassett who made the motion to extend to Lancaster on his visit to Washington the privilege of the Speaker's chair while Congress was in session, an episode which led the *Federal Gazette* (Baltimore) to comment as follows on Lancaster and Speaker Henry Clay:[7]

Mr. Lancaster and Mr. Speaker Clay
When slim Speaker Clay, looking up at his chair
Saw that very fat man Joseph Lancaster there,
He said, while with pleasure the pun through him thrilled,
"Sir, I never before saw that chair so well filled!"

The Teacher, well pleased, to reply was not slow;
For witty, though serious, was dignified Jo.
He mildly remarked in the same punning way,
"He who fills the chair is no better than *Clay*."

A committee of students at The College of William and Mary wrote Lancaster November 17, 1819, and expressed appreciation

[7] Reprinted in the *Virginia Herald*, April 21, 1819.

for his efforts in the noble cause of education and thanked Lancaster "for the very polite invitation to your lectures." James Stevenson wrote from Wellsburg (now West Virginia) asking about the expense involved in learning how to be a teacher under Lancaster's system; and Alexandre Deblieux, a native of France, wrote from Natchitoches, Louisiana, deploring educational conditions in that State, applauded the Lancasterian method, and enclosed copy of a public appeal which Deblieux had made in behalf of education.

But one of the most interesting letters[8] to Lancaster was written from Warminister, Virginia, July 1, 1819, by Joseph C. Cabell, sympathetic and energetic coadjutor of Thomas Jefferson in behalf of a public school system and the University of Virginia. Politely Cabell criticized the value of Lancaster's system, particularly in the South because of the scattered population there, but requested information on its possible adaptation to rural conditions.[9]

Lancaster did seem to be able to arouse enthusiasm among some people hitherto indifferent to education, and the cities in Virginia were among the first in the South to show interest in the new scheme of cheap popular education, "to have schools but to avoid paying taxes for them." According to report by Robert Ould, Alexandria had built a house and engaged a teacher to take care of 360 children on the Lancasterian plan and a lady of that town organized a monitorial school for 450 children. Monitorial schools were reported in Petersburg, Winchester, Fredericksburg, and King William County. In 1816 the cornerstone of a Lancasterian school was laid in Richmond, and the next year Reverend Samuel Low of the Episcopal Church of Norfolk made an address at the laying of the cornerstone of "The Norfolk Lancaster School," founded by the council of that city. David Anderson had left by his will the sum of approximately $20,000 for the support of a free school in Petersburg and when the fund became available in 1820 its income was combined with the town's quota of the Literary Fund of Virginia which had been established in 1810. Petersburg's quota

[8] The originals of the letters referred to here are the property of the American Antiquarian Society and quotations from them are made with its permission. Microcopies of the letters are in the Library of the University of North Carolina.

[9] Cabell was also interested in Pestalozzian methods of teaching. In efforts to improve his health, Cabell was in Europe from 1803 to 1806 when he visited Pestalozzi's celebrated school at Yverdun in company with William McClure, who in 1806 brought Joseph Neef, once an assistant to Pestalozzi, to Philadelphia where he opened a school. As secretary of the Board of School Commissioners of Nelson County, Virginia, Cabell reported in 1824 that the teachers of that mountain county were acquainted with the Pestalozzian system about which he was himself enthusiastic. In that report he said that in Pestalozzianism was "a sure cure for the miserable conditions most of our schools have fallen into. . . . The new system has been adopted by the WHOLE of our public schools, and from present indications, it promises in the course of another year to become the exclusive and universal method." In 1830 the Board of School Commissioners of Washington County suggested in its report that the General Assembly of Virginia provide for the establishment of a school on the Pestalozzian plan in each county "for the education of young men as teachers."

of that fund was used in 1822 for 130 poor children in "Anderson Academy" which was organized as a monitorial school, and Norfolk used its quota of the Literary Fund to aid a Lancasterian Society in that city.

Perhaps the saddest of all the letters written by Lancaster while he was exploiting his method in Virginia were to his daughter Elizabeth in Philadelphia. Three of these were written within the same week and dealt with financial affairs. In spite of his obvious mercenary traits, Lancaster seems to have been selfishly improvident so far as his own household was concerned. It is in one of these letters that he criticizes his former friend and representative Ould for not lending him money. He wrote Elizabeth that Ould had made $2000 in fees for training teachers, "Yet to borrow a dollar of him would be a little better than attempting to bleed a stone. . . . I have no doubt of *the rent* being raised *by ye 31* (I mean one-quarter)—if I can command both, which I think likely will." Two days later he wrote Elizabeth that he had lectured twice in Fredericksburg with 84 people present *"but the produce was 42* dollars at 50 cents each person: of which I remit 15. . . ." In the same letter he said: *"The people here are not like the Bostonians;* they do not put in *buttons*—bad silver and copper —*forged* notes and *bits of tin;* but they pay their *50 cents* each and *call it cheap.* I am told, that at Charleston in Carolina they think nothing of a dollar for a *lecture* but I am not yet disposed to try Charleston.

"Respecting *the rent,* I have no doubt that the Landlord will be easy *a few days,* for his own credit sake."

It has been noted often that, historically viewed, education ranks in conservatism along with such other deep-seated human interests and activities as religion, politics, and economics. Notwithstanding its alleged conservative character, and even allowing for the obvious values of intelligent experimentation, education in this country has often seemed rather naïvely susceptible to innovations and to untested theories. There is some evidence that few if any such deep-seated human interests have been more sensitive than education to exaggerated proposals, waves of opinion, fashions or fads, especially if these promise promptly to work magical reforms. Movement after movement, scheme after scheme, experiment after experiment, device after device in education in this country have had their day and then have ceased to be. Lancasterianism was one of the faddish devices and served also

as illustration of the ancient truth that "there is no royal road to learning."[10]

The monitorial system advocated by Lancaster seems to have been less a method of teaching than a method of organizing schools for "mutual instruction." The alleged inexpensiveness or cheapness of the device, its promise of certain superficial results with large numbers of children at very low cost, and its claim that schools could manage themselves made appeal to many and aroused enthusiasm among some people, especially those who were strongly opposed to taxation for schools. The scheme also held out humanitarian promise of a modicum of educational opportunity for the poor and otherwise underprivileged children. But its fair promises were soon found to be unfulfilled. Thoughtful people in time came to see that any device that permitted children who knew little to undertake to teach those who knew less was morally wrong as well as psychologically unsound, and the monitorial practices slowly disappeared as public conscience came to recognize the right of children to have good teachers.

There is ample documentary evidence that Joseph Lancaster was personally conceited and perhaps mercenary and selfish, notwithstanding the apparently heavy missionary and compassionate streak in his nature. But his pedagogy, as quixotic as it appeared to be and as we now know it was, should not be judged by the weakness of its "inventor's" personal character. It now seems clear that Lancasterianism contained the seeds of its own decay, like many faddish educational devices since Lancaster's time and perhaps some observable in the current educational scene in this country.

[10] This is said to be a misquotation of a remark by Euclid to Ptolemy I of Egypt, who wished to learn geometry, and asked the great Greek mathematician if the subject could be acquired without the intellectual inconvenience of going through the thirteen books of his *Elements*. Euclid is reported to have replied: "There is no royal road to geometry."

Curricular Offerings in the Early High School in Ohio

KENNETH V. LOTTICK
State Teachers College, Fredonia, New York

THE pattern of curriculum development in the high schools of Northeastern Ohio represents one of the interesting aspects of educational change. For several reasons the schools of the lake region had a unique background and served as experimental agencies for the development of changed concepts of education. The first of these determinants was the purity of the New England migration and its reproduction, under new conditions, on the shores of Lake Erie of a "New Connecticut." Secondly, the area most certainly was a frontier and one which, actually, was far removed from its mother region. Moses Cleaveland entered the Western Reserve thirty years before the opening of the Erie Canal and this section was settled before the development of the Buffalo frontier, farther to the east. Thus, the peripheral influence as well as the virility of the Yankee tradition were conditioning agents. A new synthesis would result from the development of new educational patterns in the first State to be created from virgin territory after the adoption of the Federal Constitution.

When the State of Connecticut, on September 14, 1786, surrendered her claims in the "Old Northwest" to the federal government, she reserved some three million acres in what later became the State of Ohio. This tract stretched one hundred twenty miles westward from the Pennsylvania border and extended from Lake Erie on the north to the forty-first parallel on the south. In addition to the area now comprising Portage County, Ohio, it contained the land constituting eleven present-day counties and parts of two others. Popularly known as the "Connecticut Reserve" or the "Western Reserve," some of its settlers preferred the name, "New Connecticut."[1] At any rate drawings had been made for the lands in the various townships before leaving Connecticut and the "nutmeg" influence was strong.

Meanwhile, the "Territory Northwest of the River Ohio," which had been erected in 1800 out of the eastern part of the original Northwest Territory plus the reserve which was retroceded in the same year, became the State of Ohio. The Enabling Act was passed by the federal congress in 1802 and a constitutional con-

vention was held at Chillicothe the same year. The territory was recognized as a State by the United States Congress on February 19, 1803.

Ephraim Cutler, a good Yankee, amended the original draft of the State constitution to make it the imperative duty of the General Assembly to support education by the insertion of the famous phrase of the Northwest Ordinance of 1787, "religion, morality, and knowledge being essentially necessary to good government and the happiness of mankind, schools and the means of instruction shall forever be encouraged by legislative provision not inconsistent with the rights of conscience."[2] Regardless of this noble gesture the educational provisions enacted by the convention were only permissive. They allowed corporations power to have schools if they wished to and to erect buildings for that purpose. Otherwise, parents might go together and employ a teacher for the local group at their own expense.[3]

The reserve was peopled in the main from New England, although pioneers from New York and Pennsylvania added to the number. As New Englanders, the settlers brought with them several definite ideas relative to education, which were different from those of other regions: (1) the idea of school lands for the support of education; (2) the idea of a State system of schools; and (3) the principle of State-wide taxation for the support of schools.[4]

In discussing the educational legislation in the State of Ohio between the years 1803 and 1850 the following divisions, which indicate the type of school policy followed, have been used:

1803-1821 Subscription or pay schools
1821-1825 State recognition of the public school idea
1825-1837 Property taxed to aid the schools
1837-1850 Operation under a loose school system
1847-1850 Development of town and city school organization[5]

Between the years 1840 and 1855 a great deal was accomplished by the grading or dividing of the students in the schools according to progress and ability. Those who had secured a certain degree of attainment or proficiency were placed in different rooms, grades, or sections. This, supposedly, was a real advantage to both teacher and child. Prior to this much of the teaching had been attempted by the oldest methods. A teacher took a roomful of children of assorted sizes and ages and tried to give individual instruction by following some recognized textbook until mastered by each student or, possibly, several students. Frequently everyone was in a different place in the book in progress and often the

books were of different kinds. Under the graded system those more nearly of the same progress were placed in one group and this group was passed to the next highest division or retained as the students' progress might direct. About this time five grades came to be generally recognized: primary, secondary, intermediate, grammar, and high school. Later the number of grades below the high school division was doubled.[6]

During this period of organization and extension of the common schools the academy was being chartered in all parts of the State to provide a higher instruction than that of the primary school. As the Latin Grammar School had been the foundation for the academy, so the academy was to become a foundation for the public high school. It is to be noted that the academy was one of the outstanding developments in the Western Reserve, and one writer claims that it outstripped any other section in the organization of these institutions by three to one.[7] Although it is difficult to find the records of the academies, due to the fact that many had only a ephemeral existence, Miller, in a study of early school legislation, states that the following were chartered by the General Assembly to operate in Portage County, Ohio, during the years 1816-1850:[8]

Tallmadge (then in Portage County)	1816
Nelson	1822
Ravenna	1834
Windham	1835
Western Reserve Seminary at Streetsborough	1838
Edinburg	1838
Akron High School (an academy) *	1838
Ravenna Female Seminary	1839
Streetsboro (sic) High School	1840
Franklin	1844
Aurora Academic Institute	1845

Western Reserve College, now Western Reserve University at Cleveland, was chartered at Hudson (then Portage County) in 1826, and the Western Eclectic Institute, now Hiram College, in 1850.[9]

Burrell, in an unpublished study of the academy in Ohio, says, "It is probable that every town [township] had an academy at one time or another during this period of organization in the common schools and genesis of the high school."[10] Thus, it was not too great a break, after the permissive legislation just described, to expect the development of indigenous schools of advanced work of higher grade and subject matter.

* Akron was then in Portage County, Summit not having been erected until 1840.

The Akron Act, of 1847, a year later to be applied to all the districts of the State, provided for the establishment of a school to teach higher branches than those of the common schools in the city of Akron. The act read, "to establish a Central Grammar School providing instruction in various studies and parts of study not provided for in the primary (elementary) school, and yet requisite to a respectable English education."[11] The act further provided that such a school should be supported by general taxation and that admission should be free, although the applicant should be required to pass "a proper examination."

An act passed in 1849 allowed a separate school district to be set up in any place where the population could be shown to be at least two hundred, providing the majority of voters wished it. The act made it the duty of such a district to establish, through its board of education, a suitable number of schools of higher grade or grades, where instruction should be given not provided by the primary schools. It also provided that the term of the new school should be not less than 36 or more than 44 weeks in length.[12] This act, because of the latitude of its implications, is sometimes spoken of as the "Magna Charta" of secondary education in Ohio.

In 1853 the passage of the Rice Act reestablished the State Education office and provided for district and township organization of a better type. It organized each township as a school district (cities exempted), but as a compromise allowed the incumbent boards to retain their organization as sub-district boards, operating, ostensibly, under the township board, but actually possessing the last word. Each sub-district was to choose three directors and a clerk. The clerks of the sub-district boards acting with the township clerk were to make up the township board. This entity had power to create new sub-districts and union high schools.[13]

Profiting by the educational legislation just discussed, three centers of population in Portage County led in the establishment of the new popularly supported "high schools." Due to their advantageous locations, one at the geographical center of the county, and the other at a point of commercial vantage on the Cuyahoga, Ravenna and Kent, since early settlement, remained the chief centers in the county. Garrettsville, to the northeast, and Mantua, to the north, challenged their growth, but were soon exceeded by their more fortunate neighbors.

Ravenna, when incorporated as a village in 1853, possessed as many as three private schools—the Ravenna Female Seminary, the Ravenna Institute, and the Ravenna Seminary of Natural Science.[14] The establishment of the Ravenna Union School in that year pre-

ceded the action of Kent by seven years and followed the provisions laid down by the Akron Act of 1848.[15]

Garrettsville was established as a village in 1865 and a high school was begun about 1867. In 1874 the village, consisting of one square mile, was organized as a township also, and now presents the anomaly of a modern duarchy.[16] By 1885 when the first record of high school graduates appears in the *Ohio School Reports,* Garrettsville had graduated sixty students.

The annual reports of the State Commissioner of Common Schools did not attempt to divide, until 1914, the curricular enrollments on the basis of common school and high school areas. It is only by contrasting the number of pupils involved and by recognizing the scope of the subjects recorded that the enrollment in each division can be estimated.

In 1854, when the first *Ohio School Report* appeared, following the reestablishment by the Rice Act of the State Education office, the primary or elementary school population of Portage County may be estimated at approximately four thousand pupils. Less than this, 3623, however, were shown to be studying *Reading,* while *Spelling* had enrolled 4368. *Writing* came next with 3128 and *Arithmetic* held the attention of 2924. *Geography* attracted 1507.[17] These five subjects, no doubt, represented the studies of the elementary school.

The student minority, which represents high school or advanced classes comparable to high school, was studying *Algebra* (84), *Astronomy* (21), *Chemistry* (24), *Geometry* (6), and *Philosophy* (64). *Grammar* was offered as a subject for 834 individuals, so it is difficult to determine exactly on what level the courses were being offered. It is probable that there were advanced courses for the higher schools as well as simpler structured curricula for the elementary and "grammar" grades.

In a day of practically unlimited electives offered for selection by high school populations a curriculum of six subjects seems small indeed, but this situation was not allowed to continue for long. In fact, following the trend to the multiplicity of courses so characteristic today, almost every year, after 1854, saw additions to the Commissioner's list of the curricular offerings of the high schools of Ohio. While a few of the "new" subjects may be considered as offshoots or fragments of the original six, or modifications of them, there is a functional as well as an imitative development accompanying the shift to a multi-subject program.

Four new subjects, thus, appear in 1855. *Physiology* draws 51 pupils; 38 take *Natural Philosophy;* 17 are engaged in *Map Draw-*

ing (doubtless spurred on by the repeal of the Missouri Compromise and "manifest destiny"); but only 3 in this year of division are studying *"History."*

The following year finds, as additions to courses already offered, *Composition,* with 58; *Rhetoric,* 3 (although there was an abundance in the halls of Congress); and languages, logically in imitation of the academies and the colleges, psychologically following the glorious spread of "Flying Clouds" and Yankee Clippers to the corners of the earth. *French* led with 10, to be followed by *Latin* (4) and *Greek* (1). *German* was to enter the curriculum in 1859, to remain, with ever-increasing favor until the report for the year 1918. *Mental Philosophy* appears in 1858, and *Trigonometry* and *Geology* two years later.

The war years, 1861-1865, show some interesting trends. The new subjects are *Botany, Physical Geography* and *Bookkeeping.* For reasons not easily determined *Philosophy* drops to the all-time low of 10 enrollees. *Geometry* and *Chemistry* hold their own, while *Natural Philosophy* booms with 42. *Astronomy* and *Latin* falter and *Greek* all but disappears. Thus, *Botany, Physical Geography* and *Bookkeeping,* for a country at war and with a large part of the male population of high school age in service, appear as substitutes for the more academic offerings of the pre-war period. Botany, it may be, appeals to the feminine mind as well as to those harboring escapist desires. Bookkeeping begins the trend toward the utilitarian in public high school education. It seems significant that it enters the curriculum at the end of the "Second American Revolution"—the beginning of the new economic era.

Directly following the war *Latin* resumes its place among the select subjects of the curriculum. In fact, its popularity is astonishing. It continues to gain by increasing degrees down to 1914, when it seems to be a study for two out of every three high school students. The explanation lies, possibly, in the strength of the Grammar School tradition of *Latin* as a preparation for college entrance, or the desire of the newest arrivals of the "people's college" to imitate the cultural background of their predecessors.

General History appears in 1873 but gained popularity only in the ten or fifteen years preceding 1914. The history course was split into more specialized departments by the introduction of *"American" History* in 1870. This, doubtless, led to the offering of *General History* three years later. *American History* itself, however, did not achieve much popularity until 1883, the year of Civil Service Reform, when it was, evidently, introduced into the elementary course of study. The number of enrollees in *United States*

History increased from 190 in 1882 to a total of 714 the following year.

In 1882 *Literature, Government,* and *Political Economy* were added. These three continue down to the present, although it appears that, in 1914, *"Civics"* supplants *Political Economy. Physics* is called by name in 1886, having been known up to that time as *Natural Philosophy.* The other sciences, *Botany* and *Geology,* had appeared in 1862. These scientific offerings continue down to 1914 with no great change in popularity, except, perhaps, a fading of interest in *Geology.*

The great increase in the number of students taking *Physiology* in 1889 (from 137 to 2846) is, undoubtedly, due to the work of the Temperance Union groups. An act by the General Assembly, in 1888, made it mandatory to teach "scientific temperance" and the effects of alcohol.

Phonography (including *Typing*) appears in 1905, *Agriculture* in 1909, *Domestic Science* in 1910, *Biology* (previously known as *Natural History*) in 1911, and *Manual Training* in 1914. The trend in the new subjects, introduced during this period, is clearly toward commercial and practical education.

Thus, it will be seen that, between the years 1853 and 1914, at least three periods in the development of the high school curriculum are suggested. They are: (1) the period of classical or traditional offerings; (2) the period of scientific or exploratory offerings; and (3) the period of vocational or utilitarian curricula. The classical may be said to extend from 1853 to 1885; the scientific from 1885 to 1910; and the vocational and practical from 1910 to the period of the reorganization of the high school, about 1930.

It will be noted that the use of dates in such a delimitation is highly arbitrary; moreover, there are many exceptions to what appears to be the key or determining subjects of the curricula. So, while the subjects of the "classical period" are *Geometry, Composition, Chemistry, Natural, Moral* and *Mental Philosophy, Astronomy, History,* and the languages, there are also *Physiology, Drawing, Map Drawing,* and *Bookkeeping.* In the "scientific period" these contrary instances are supplemented by *Literature, Government, Political Economy* and many "classical" subjects. The "vocational" or practice period is heralded by the appearance of *Psychology,* first offered in 1903, *Agriculture, Typing, Domestic Science,* and *Manual Training.* Among the exceptions here is the offering of a highly specialized academic subject, *English History,* in 1912, although, in the light of what was to follow in a matter of only a few years, this does not now seem too inexplicable. Con-

versely, the offering of *Economics* in 1914, while certainly not vocational, is harmonious when placed in reference to the shift to the utilitarian.

The Commissioner's report for the year 1914 shows a total of 149 graduates from Portage County schools. This, while not large by some standards, was a large number for a county of the size and population of Portage, and suggests that this county may be quite representatively used as a sample of the pattern of curriculum-development in the high schools of Northeastern Ohio. It was further demonstrated, therefore, that in the popularizing of secondary education, as well as in illustrating the shifts and trends of the curriculum, Northeastern Ohio placed herself in the vanguard.

DOCUMENTATION

1. Hinsdale, Burke Aaron. *The Old Northwest,* p. 358.
2. *Ohio Constitution,* Article VIII, Section 3; Atwater, Caleb, *A History of the State of Ohio,* p. 234.
3. Upton, Harriet Taylor. *History of the Western Reserve,* I, p. 146.
4. Miller, Edward A. "History of the Educational Legislation in Ohio from 1803-1850." *Ohio Archaeological and Historical Quarterly,* 27:1-142, 143-271, p. 12.
5. Miller. *op. cit.,* p. 11.
6. Howe, Henry. *Historical Collections of Ohio,* pp. 142-143; *The Centennial Volume,* pp. 106-116.
7. Miller. *op. cit.,* p. 96.
8. *Ibid.,* pp. 97-101.
9. Hinsdale, *The Eclectic Institute,* 19 pp.
10. Burrell, Bernice Jeanette. *The Academy of Ohio* (unpublished), p. 3.
11. Washburn, Carl DeWitt. *The Rise of the High School in Ohio,* pp. 100-101.
12. *Ibid.,* pp. 101-102.
13. *Ibid.,* p. 105.
14. *The Evening Record,* Ravenna, Ohio. (Centennial Number), Oct. 6, 1930, Section I, p. 10.
15. *Ohio School Report, 1879.*
16. *Centennial Volume; The Evening Record,* Section III, p. 1.
17. *Ohio School Reports,* 1854-1914, 61 volumes, Columbus, The State of Ohio, published annually.

Individual Differences and the Teaching Algebra*

JAMES EARL DANIELEY

THERE is no method of instruction which is a panacea for all of the ills of college algebra teaching. In any classroom there are four or more variables which enter into the effectiveness of the learning situation: (1) the physical environment, (2) the class, (3) the subject, and (4) the teacher. As any one of these conditions varies, the method must also be varied if the teaching is to be most effective.

It has become more or less convention that in many college classes the professor lectures to his students. For some subjects this method can be effective but in the teaching of algebra its effectiveness is doubtful. The understanding of quadratic equations, exponents and radicals or progressions is not brought about by even the most intellectual of lectures. An attempt to teach algebra by the lecture method is for the most part a waste of time for the teacher and for the student. Algebra is learned by doing, not by listening to someone tell how it should be done. It is not conceivable that all of the students in any given college algebra class will have either the same ability or preparation. Therefore, any successful method of instruction must, of necessity, provide for the individual differences.

Some of the objectives for a course in college algebra are:

1. To begin with the students regardless of their previous training and to teach them as much algebra as possible.
2. To provide for the individual progress of *each* and *every* student according to his ability and initiative.
3. To encourage independent study and to develop a sense of responsibility and self-reliance.
4. To develop a sense of satisfaction in the accomplishment of a given task.
5. To prepare as many as possible for the further study of mathematics.
6. To plan the activities of the class period so as to save time and effort for the teacher and the student.

* Based on an experiment conducted at Elon College during the fall quarter of 1947-48. Our Mathematics editor says that the plan described is even more applicable in the high school than in the college.—*Ed.*

7. To give to those who are interested and capable something more than the "bare minimum" and to allow the student to select, with teacher-guidance, topics to be studied beyond the required work.
8. To reduce the number of students failing the course to a minimum.
9. To make teaching an activity of stimulation and guidance, assisting the students to do their work.
10. To give to each member of the class something *worthwhile* to do during the entire period, not as a matter of keeping him busy but in order to accomplish the desired goals.
11. To develop student interest in algebra and to help the students to see the importance and advantages of purposeful practice.

It is the thesis of this writer that these and other objectives can best be attained in many instances by using some form of individual instruction. It would seem impossible to give such instruction to all of the members of a class of thirty or more in the same length of time that is normally used for class instruction. Such, however, is not the case.

There are certain conditions which must be met if the plan is to operate successfully. As has already been mentioned the class, the subject, the teacher and the physical environment must all be such as to offer no serious problem to the operation of this method. In addition to these four variables, the textbook which is used must be clearly written and the type problems must be thoroughly explained. It is also necessary for the teacher to indicate the amount of work which is required of all students who are to receive credit for the course. This can probably best be done by using a mimeographed sheet of assignments so that the student knows exactly what he has to do. The work must be so organized that each student is free to work at his own rate. Each student may do as many assignments in a given period as he wishes to do. This gives to each student the opportunity to progress at the rate which he desires and of which he is capable.

There are several methods by which the necessary assistance may be given to those students who have difficulties: (1) It is possible in some classes which are small for the teacher to give all of the assistance which is necessary. This plan works well under certain conditions but even when it is administratively practical it is not always the most desirable for the class. (2) In some cases it is advisable to have a seating arrangement which leaves a vacant seat next to each student. Under teacher-guidance the

students are at liberty to move around the room during the class hour and work with others who are capable of assisting them with their difficulties. This method works well if there is a sufficient number of seats and, if they are so arranged that the students can work together without unnecessary disturbance to the other members of the class. (3) Where there are insufficient seats, it is possible, after some observation, to make a seating arrangement which places the more capable students next to those who have had insufficient preparation and in this way those who are capable can render assistance to those who may need it. (4) Another plan which seems very desirable under some circumstances is to select four or five of the most capable students and to allow them to assist by going to the desk of the student who is experiencing difficulty and answering his question or explaining the problem to him. The teacher must guard against using these students so much that they will not find time for their own work. Each of these plans offers advantages under different circumstances. Only a person familiar with the conditions in a particular situation can determine which plan should be used.

Testing is the greatest problem to be solved in connection with this method of instruction. Tests should be given at regular intervals to determine whether or not the students are able to work problems similar to those they have worked in their assignments. Such tests should include only the type of problem which has been practiced by each student. This necessitates the giving of several tests. It is possible to divide the class, for testing purposes *only*, into four or five groups and to give a different test to the students in each group according to the amount of work which they have successfully completed.

The following concluding statements can be made regarding individual instruction in algebra on the college level:

1. Because of greater individual differences, individual instruction offers even greater advantages on the college level than it does in the elementary or secondary schools.
2. The learning of algebra is an individual process which is accomplished only by doing. Individual instruction is the most economical way of having all of the students *do* their maximum.
3. The number of students failing to do satisfactory work under this plan is much lower than under the plan of class instruction. Not only this, but the grades of a majority of the students are higher.

4. This plan provides for individual differences in that the student begins work regardless of previous preparation and progresses at the rate which he desires and of which he is capable.
5. This plan places on each student a definite responsibility for doing a specified amount of work and gives opportunity to those who are capable to do much more, to do that under teacher guidance.
6. Every member of the class has something worthwhile to do all of the time. All of the student's work can have purpose and no one is held up who is capable of doing more advanced work.
7. The using of more capable students to assist those students who have difficulty gives to them an almost invaluable experience and presents to them a challenge which they enthusiastically accept.
8. Teacher-student relationships are much more pleasant and the teacher is able to better serve as a guide and counsellor to the students.
9. Student interest is greater in that the more capable are challenged to do more work and those who do not have the necessary background are not forced to listen to discussions which they are unable to comprehend.
10. The majority of the students are better prepared for further study of mathematics. They accomplish more in the course and more important than that is the fact that much of it is done on their own initiative.
11. This method is not desirable in all classes. Its desirability and practicability must be determined by the teacher who is familiar with the conditions under which the plan must operate.

Efficiency of Group Tests of Intelligence in Discovering the Mentally Deficient

A. M. JORDAN
University of North Carolina

THE present investigation is an outgrowth of a recent study entitled "Testing the Intelligence of the Children of a Rural County."[1] In that article a report was made of the intelligence of the children of a rural county by means of a group intelligence test. A skilled tester administered all the tests and the scoring was done in a central office under favorable conditions. It was hoped there to get an indication of the usefulness of a well-standardized group test in determining the number of mentally defective present in a rural area. However, our efforts were not entirely successful because we ran into the problem of lower than average intelligence quotients. The mean I. Q. in this investigation was in the low nineties. This fact immediately raised the problem of the efficiency of using an I. Q. of 70 as the dividing line for determining mental defect. It was then suggested, though by no means proved, that an I. Q. of 60 be used as the dividing line on the group test instead of the usual 70. This problem of deciding upon the number of feeble-minded or mentally defective by means of a carefully administered group intelligence test had not been solved.

The present investigation[2] continues this investigation and hopes to throw a clear light upon this problem. Our problems, then, may be subsumed under the following headings:

1. The survey of a large urban population with a group test of intelligence.
   a. Analysis of results according to grade, age, race, and occupation.
   b. The determination of the percentage of mental defect as indicated by the group test, by grade, age, race, and occupation.
2. The study of a carefully selected population of nearly two hundred cases by means of the Terman-Merrill individual

[1] *High School Journal*, January-February, 1947.

[2] This investigation was conducted under the auspices of the Human Betterment League of North Carolina and was financed by Mr. James G. Hanes of Winston-Salem, N. C.

test. These cases were in general but not entirely selected from those scoring seventy and below on the group test.

3. Some hazards as to the probable number of mentally defective in the total school population.

I. *The Survey with Group Tests*

We were fortunate to be able to secure the cooperation of the administrative authorities of the city of Winston-Salem, North Carolina, in carrying out our project. Winston-Salem, a city of some 80,000, is the home of Camel Cigarettes. Furthermore, there are extensive knitting and weaving mills and other smaller industries. It can definitely be classified therefore as a manufacturing city. Thousands of the parents of the children in our investigation work in these manufacturing plants as an inspection of our occupational analysis will show. In our study, the children tested were located in Grades I-VIII in both white and Negro schools. More than 95 percent of the elementary school children of the city were tested in our investigation.

In making such a study three conditions were necessary for successful completion: (1) the tests must be carefully selected; (2) the tester must be well trained; (3) the scoring must be accurately done. In selecting the tests of mental alertness greatest care must be exercised to select tests which do not penalize the subjects being tested. All scores on intelligence tests are based on the child's ability to solve new problems. However, the items which enter the new problem must not be new but must have been present in the child's environment. If those elementary items out of which the new problems are made have not been experienced then the problem cannot be a measure of the child's intelligence. To make certain that all subjects are acquainted with these elementary items test constructors go to great pains in selecting problems common to all environments. In spite of their best efforts a few problems creep in, the elements of which have never been experienced. Thus at year six in the Stanford-Binet the question to the child is "Show me your right hand, your left eye, and your right ear." Had the child never experienced right and left this question could not test his intelligence. In one of our tests the command is "Mark the things that have feathers." There are pictures of twelve objects—horse, cat, bird, rabbit, squirrel, hen, rooster, butterfly, turkey, bee, goose, and owl. If a child had lived to be six years old and had not experienced a majority of those animals then the test would be unfair to him.

SELECTION OF TESTS

From this discussion it is abundantly clear that the selection of the tests required careful consideration of the experiences of the children, together with a survey of the tests which would meet the essential criteria of good testing. After a prolonged study of these matters the author chose the Pintner General Ability Tests, Verbal Series. The tests used were: (1) Pintner-Cunningham Primary Test, Form A in Grade I and the first half of Grade II; (2) Pintner-Durost Elementary Test Scale 1, Form A (picture content) and Pintner-Durost Elementary Test, Scale 2, Form A (reading content) in the last half of Grade II, Grade III and the first half of Grade IV; (3) Pintner Intermediate Test, Form A in the second half of Grade IV through Grade VIII.

This series had several advantages. In the first place, testing could be carried on through the first half of Grade III with the use of picture content. In the second place, the three tests are so constructed that an I. Q. at one age just about equals that one secured at another age. This is true even though the test is different. In the third place, the tests were constructed according to the best principles of test construction. The standardization especially was carefully and rigorously done. Finally, this same series had proved satisfactory in our first investigation with rural children.

THE EXAMINER

The second requisite of accurate testing is a well-trained examiner. We were fortunate in this investigation to have secured the services of Mrs. Mary Martin Huse who had taken courses in both group and individual testing. Her instructor in these courses has a wide reputation for his thoroughness of instruction and his scientific attitude. She had finished all courses in psychology for her master's degree when she began testing. Furthermore, she and the writer studied minutely every detail of the Pintner, Verbal Series, until she had mastered the procedures of administration. Mrs. Huse also had the experience gained in testing the more than three thousand rural children in our first investigation. With such preparation and experience it was felt that the tester who administered the test to all the children was thoroughly prepared for the work and that we could accept the results with confidence.

CORRECTING AND SCORING

The third requirement of good testing is the using of great care in correcting and scoring the papers. There are many chances of error in scoring, in adding, and in copying. All tests were

scored by one person and later checked by another. We were fortunate in securing careful, dependable workers to perform this work. It is apparent, therefore, that the requirements of suitable tests, trained tester, and care in scoring were met in this program of testing.

RESULTS

The results of the investigation will be presented in a series of tables. In the first tables the data are presented as a whole. With each succeeding table analyses are made to study the distributions of intelligence quotients by grades, by ages, by occupation, and by school. The first table, Table 1, sets forth the distribution of the intelligence quotients. It will be noted that the mean is practically 98 and the standard deviation, 17. The results are practically the same in both particulars as the groups on whom the tests were standardized. Two hundred eighteen cases or four percent fall below the I. Q. of 70 and 34 or .6 percent fall below 60. It is demonstrated later in this paper that sixty percent of the number scoring below 70 I. Q. on the group test would fall below an I. Q. of 70 on the individual test.

In Table 2 the distributions are presented by grades. Inspection of the table indicates that there is slight variation in the

TABLE 1

Intelligence Quotients—White Children (Pintner Series of Tests)

	f			f
160	3		90	622
155	3		85	561
150	8		80	476
145	18		75	353
140	39		70	224
135	65		65	129
130	94		60	55
125	141		55	25
120	232	(49.5 up to 54.5)	50 & below	9
115	311			
110	401		N.	5429
105	505			
100	548		Mean	= 97.70
95	607		S.D.	= 17.40

Number below 70 = 218
60% number below 70 = 130[1]
Percent below 70 = 2.4

[1] On a later page in this paper it is demonstrated that the group test tends to place too large a percent below an I. Q. of 70. If sixty percent of the number below 70 on the group test is taken the number thus computed will equal the approximate number obtained by using an individual test (say the Terman-Merrill Revision) to test the same population. In the above case had the Terman-Merrill been used the number below an I. Q. of 70 would have been about 130. In all tables this same procedure is followed.

means and standard deviations from grade to grade. The means vary from 96 to 100 and the standard deviations from 16 to about 18. Interesting is it that the percent in each grade below an I. Q. of 70 varies from 2 to 3 percent.

In Table 3 are presented the distributions of intelligence quotients by age. A clearcut picture of the bright-young and the dull-old may be had by observing the high I. Q.s of the six-year-olds and the low I. Q.s of those at 15, 16, and 17. It is quite evident that a child whose age is 15, 16, or 17 and who is still in the elementary school is undoubtedly greatly retarded as regards his chronological age. In general, such cases are really accelerated

TABLE 2

Intelligence Quotients of White Children Arranged by Grades
Pintner Series of Tests

(Total number is 5316. 113 could not be classified as being in a particular grade.)

I. Q.		AGE							
		I	II	III	IV	V	VI	VII	VIII
	160	..	..	..	..	..	2	..	1
	155	..	..	1	..	..	..	..	2
	150	..	..	1	1	..	1	1	3
	145	2	1	3	..	2	1	4	4
	140	5	2	8	3	6	3	6	3
	135	12	7	5	4	9	8	7	12
	130	12	19	5	14	11	13	8	13
	125	14	28	14	16	18	16	17	18
	120	26	43	11	23	29	37	28	32
	115	45	50	36	25	40	41	39	32
	110	53	50	48	53	43	58	41	50
	105	75	77	51	50	71	75	53	53
	100	79	99	51	63	75	44	64	67
	95	77	99	67	61	80	60	83	66
	90	65	91	81	63	97	63	67	78
	85	58	89	70	73	76	62	65	56
	80	41	67	71	49	67	55	69	53
	75	29	45	48	48	63	25	46	37
	70	21	26	25	28	34	23	36	18
	65	12	10	17	10	20	15	21	13
	60	5	8	6	12	5	8	6	3
	55	4	3	1	4	1	2	4	1
(49.5-54.5)	50 & below	3	1	..	1	..	1	2	..
	N	638	815	620	601	747	613	667	615
	Mean =	99.65	98.70	96.00	96.40	96.65	99.50	96.30	99.85
	S.D. =	16.95	16.38	17.00	17.25	16.80	17.75	17.90	17.90
Number below 70 =		24	22	24	27	26	26	33	17
60% number below 70 =		14	13	14	16	16	16	20	10
Percent below 70 =		2	2	2	3	2	3	3	2

TABLE 3

Intelligence Quotients of White Children Arranged by Ages

I. Q.	Age 6	7	8	9	10	11
160	..	..	..	..	..	2
155	..	..	..	1	..	..
150	..	..	2	..	1	..
145	1	2	3	2	1	1
140	1	6	2	10	5	5
135	2	17	2	9	7	7
130	..	21	12	11	14	9
125	..	24	24	17	17	16
120	2	38	30	23	33	33
115	3	61	40	37	36	45
110	6	68	46	48	65	43
105	3	104	53	53	80	60
100	4	101	79	62	84	45
95	6	96	81	70	79	81
90	1	77	80	81	81	95
85	2	46	83	79	70	65
80	1	38	57	56	47	59
75	..	18	38	42	43	43
70	1	14	19	14	17	33
65	..	4	6	11	12	15
60	..	3	4	2	3	9
55	..	..	4	1	1	2
(49.5-54.5) 50 & below	..	..	..	..	3	..
N	33	738	665	629	699	668
Mean	107.90	103.65	98.40	98.70	99.30	97.20
S.D.	16.60	15.35	16.25	16.90	16.25	17.35
Number below 70 =	0	7	14	14	19	26
60% number below 70 =	0	4	8	8	11	16
Percent below 70 =	0	.5	1	1	2	2

I. Q.	Age 12	13	14	15	16	17
160	..	1	..	..	..	..
155	..	1	1	..	..	..
150	1	4	..	..	..	..
145	3	4	1	..	..	..
140	5	3	2	..	..	..
135	9	10	2	..	..	..
130	10	11	6	..	..	..
125	20	15	8	..	..	..
120	27	35	11	..	..	..
115	43	25	20	1	..	..
110	46	54	25	..	..	..
105	75	42	30	4	1	..
100	66	60	35	11	..	1
95	65	56	53	17	2	1
90	65	65	51	20	4	2
85	81	61	43	26	5	..
80	56	59	53	35	13	2
75	49	36	39	30	12	3
70	27	22	35	31	8	3
65	14	13	19	22	12	1
60	4	4	9	12	4	1
55	4	1	3	6	2	1
(49.5-54.5) 50 & below	..	2	1	1	1	1
N	670	584	447	216	64	16
Mean	98.05	99.35	92.70	80.75	76.35	77.00
S.D.	17.30	18.23	17.30	12.25	10.55	13.60
Number below 70 =	22	20	32	41	19	4
60% number below 70 =	13	12	19	25	11	2
Percent below 70 =	2	2	4	12	17	12

when their position is based on their mental age, i.e., their mental age is below that of their peers in the grade which they occupy. The variation in standard deviation is also noticeable. The lack of spread to the higher I. Q.s of those children who are 15, 16, and 17 years of age is reflected in the small standard deviation.

Note especially in this table the tendency for a larger percent of the 14, 15, 16, and 17-year-olds to fall below an I. Q. of 70. This percent runs up to 17 for year 16 and 12 at year 17. It is clear that the normal and superior children at these upper ages are either in high school or have dropped out of school entirely.

Our final problem consists of a rough attempt to classify the children's scores according to the stated occupations of their parents. On each child's school card there is a blank for the occupation of the parent. From the occupation reported it is difficult to know exactly what is meant. For this reason, the results of this section are not to be taken too seriously. The writer is convinced, however, that when there are a considerable number of children in each classification the general trend is substantially correct. In many cases we simply put down exactly what was on the card and made no effort to fit the classification into those used by others. Altogether 3500 children were classified according to their parents' occupations or about 65 percent of the total number.

The results of this classification of children according to the occupations of their parents appear in Table 4. These tables are arranged according to the size of the means of each occupational group. Thus the mean of the I. Q.s of children whose parents were members of a profession was 114 and leads the list; the mean I. Q.s of children of salesmen is about 100 while the lowest mean of all, about 90, was obtained by children of truck drivers. It is noteworthy that the children of accountants, auditors, bookkeepers, managers, clerks, engineers, and foremen are well above the average in the scores obtained. On the other hand, children of beauticians and barbers, factory workers, technicians, and truck drivers score well below the average. The classification of "housewife" is not clearly understood. It may mean that the father of the family is dead or is separated from the spouse. One other way to study these occupational classifications is through the percent below 70 in each table.

It would be less than accurate did one not call attention to the children from every occupational level who score 100 and far above. Thus among the 162 children of truck drivers 40 scored above 100 and three above 130.

For purposes of study of the individual schools within the city,

TABLE 4

Intelligence Quotients Arranged According to Occupations of Parents (White)

	N	Mean	S. D.	Number Below I.Q. 70	Percent Below I.Q. 70 (See Table 1)
Professional	216	113.9	16.9	0	0
Accountants, Auditors, Bookkeepers	55	111.3	17.3	0	0
Managers	159	107.4	15.5	.6	.4
Clerks	157	107.1	17.2	1	.6
Engineers	28	106.6	16.8	0	0
Foremen	111	106.5	16.1	0	0
Tobacconists	22	105.8	17.0	0	0
Insurance	70	105.7	15.7	.6	1
Merchants	59	104.0	16.4	0	0
Bus Drivers	75	103.1	12.1	0	0
Owners, Partners	86	103.1	15.8	0	0
Railroad Workers	65	102.2	14.5	.6	1
Police, State Patrol	51	101.1	15.1	0	0
Salesmen	371	100.9	16.4	.5	1
Contractors	47	99.8	17.8	.6	1
Barbers, Beauticians	29	95.6	18.1	1	7
Factory Workers	905	93.6	16.2	32	4
Technicians	743	93.5	15.7	22	3
Housewife	97	92.3	15.9	3	3
Trucking, Truck Drivers	162	89.9	15.3	10	6
Total	3508				

TABLE 5

Intelligence Quotients Arranged by Schools (White)

	N	Mean	S. D.	Number Below 70 I.Q.	Percent Below 70 I.Q.
Reynolds High	249	108.3	18.5	1	.5
Ardmore	575	107.6	15.4	.6	.01
Wiley	884	104.6	18.4	14	2
North Elementary	532	96.6	16.3	15	3
Waughtown	179	96.8	15.6	5	3
Central	569	95.6	16.3	16	3
Gray High	201	94.8	15.3	3	1
Children's Home	257	94.6	13.4	2	1
Granville	356	93.3	16.2	12	3
Hanes	136	92.3	14.7	6	4
South Park	365	92.3	16.2	17	5
Forest Park	542	91.9	15.4	19	4
Fairview	437	90.2	15.0	13	3
Total	5282				

the intelligence quotients of each school are now presented in Table 5. An inspection of Table 5 will show that the schools differ among themselves in three important respects; (1) means, (2) standard deviations, (3) percent of class below 70. The means of the schools vary all the way from 90.20 to 108.30. The normal or average I. Q. falls between 90 and 110. It is thus clear that the means of all schools fall within the normal limit. However, a difference of 16 or 18 points in average is considerable. It might even affect many details of the course of study most suitable to each school. The standard deviations also vary considerably. The smallest standard deviation of 13.40 was computed for the Children's Home, an orphanage. Outside of this school the smallest standard deviation was 14.75; the largest, 18.40, a difference of four points. This would mean that the children of the first school were more homogeneous with respect to intelligence than those of the second. The larger spread makes provision for individual differences more imperative. The third respect in which these schools differ is in the percentage of children below an I. Q. of 70. These percentages vary from .01 percent to 4 percent. Wherever there are fifteen or twenty children whose I. Q.s are certainly below 70 a special class could and should be provided. These classes should emphasize practical "manumental" types of work with small emphasis upon the general and the abstract.

NEGRO CHILDREN

It seemed best to treat separately our results from the examination of the intelligence of Negro children. The Negroes in Winston-Salem are making progress, but as can be easily seen from the inspection of their major occupations many of them still perform the simpler tasks in our complex civilization. Their homes are apt to be in the poorest section of the city and to have in them few of the appurtenances of our modern culture. Probably the worst feature of all is the low ceiling placed above their ambitions. In Winston-Salem it would be difficult to imagine a great mercantile establishment managed by Negroes unless their clients were also Negroes.

The data secured from the testing of Negro children will be presented in the same manner as were those of the whites. Analysis will be made of (1) their scores as a whole, (2) their scores arranged by grade, (3) their scores arranged by age, (4) their scores arranged by occupation, and (5) their scores arranged by schools.

Table 6 presents the distribution of the total Negro population, 4856 in all. All of these children were attending Grades I through

TABLE 6

Intelligence Quotients—Negro Children (Pintner Series of Tests)

	f		f
145	2	80	759
140	0	75	755
135	2	70	646
130	5	65	448
125	7	60	269
120	8	55	108
115	18	50 & below	53
110	42		
105	84	N.	4856
100	166		
95	294	Mean	= 80.90
90	502		
85	688	S.D.	= 12.55

Number below 70 = 878

60% number below 70 = 526

Percent below 70 = 11

VIII and were tested with the very same tests as those described for white children. Probably the fact that the tester was the same as with the whites may have made a slight difference since she was white. Taking the table at its face value we find a mean of 81 (80.90) and a standard deviation of 12.55. There are, moreover, 526 children whose I.Q.s are below 70. This is 11 percent of the total population. There are also 161, or 3.3 percent, below an I. Q. of 60. Some further consideration is given this point when the Pintner I. Q.s are compared with those of the Terman-Merrill.

In Table 7 distributions are presented according to grades. A glance at the means of Grades I-VIII shows that they vary in size from 78.70 to 84.35. There seems to be something of a trend downward in Grades VII and VIII. One notes also the small variations in sizes among the standard deviations—i.e., from 11.25 to 13.80. Strange indeed also is the size of these standard deviations. In a like computation in the case of white children the standard deviation ranged around 17. Could it be possible that this low ceiling in the case of Negroes' opportunities may have prevented the variation in the upper direction? Important to notice also is the percentage of children in each grade who fall below an I. Q. of 70. These percents vary from 4 in Grade V to 13 in Grade VII. Noteworthy also is the 10 percent below 70 in Grade I.

When we examine the arrays by age we can understand better what is happening to the backward child. From Table 8 it is clear that there is not much change in I. Q. with age until age 13.

TABLE 7

Intelligence Quotients of Negro Children Arranged by Grades
Pintner Series of Tests

N=4803. 53 children could not be classified into a particular grade.

I.Q.	AGE							
	I	II	III	IV	V	VI	VII	VIII
160	..	..	..	..	..	..	..	..
155	..	..	..	..	..	..	..	..
150	..	..	..	..	..	..	..	..
145	1	..	..	..	1	..	..	..
140	..	..	..	..	..	..	..	..
135	1	..	..	1	2	..	..	..
130	..	3	..	..	1	..	..	..
125	..	1	..	1	4	1	1	2
120	..	1	..	2	3	1	1	..
115	1	1	4	2	13	4	3	..
110	3	6	2	7	14	4	3	4
105	10	6	8	16	38	16	6	6
100	16	15	7	26	50	24	26	18
95	28	30	26	47	75	52	36	22
90	67	76	56	68	97	62	49	45
85	79	113	92	76	95	106	63	59
80	117	101	94	77	89	98	90	80
75	106	94	118	66	61	85	94	90
70	98	86	81	54	43	74	91	89
65	55	57	67	48	26	51	64	58
60	31	23	28	33	6	31	52	39
55	15	10	11	14	4	9	22	19
50 & below	7	13	8	8	..	1	8	3
N	635	636	602	546	622	619	609	534
Mean =	80.05	81.05	79.45	82.55	84.35	82.55	78.90	78.70
S.D. =	11.85	12.20	11.25	13.80	13.30	12.20	12.85	12.10
Number below 70 =	108	103	114	103	36	92	146	119
60% number below 70 =	64	61	68	62	22	55	88	71
Percent below 70 =	10	10	11	11	4	9	14	13

Up to that point mean I. Q.s range from about 82 to about 84. From age 13 on to age 18 a very different story unfolds. The mean I. Q. drops regularly from 78 to 61. The older children maintained in the upper grades constitute a group of learners whose capacity for abstract thinking is low indeed. The same inference is buttressed by the percent of children whose I. Q.s are below 70. The percentage at age 6 is a little more than one. At year 7, which is far more representative, 6 percent are below the I. Q. of 70. From years 8 to 12 the percent below 70 ranges from 7 to 9. But notice what happens with the ages beginning at age 13. From ages 13 to 18 the percent of children whose I. Q.s fall below 70 increases

TABLE 8

Intelligence Quotients of Negro Children Arranged by Ages

I.Q.	AGE					
	6	7	8	9	10	11
145	..	1	..	..	..	1
140	..	..	..	..	..	..
135	..	1	..	..	1	..
130	..	2	1	..	2	..
125	..	1	..	1	..	2
120	..	..	1	1	2	3
115	..	2	1	4	4	3
110	..	5	5	5	9	10
105	..	15	5	17	16	10
100	3	20	9	18	32	31
95	3	33	30	38	52	57
90	10	94	49	63	82	72
85	10	104	92	91	89	97
80	9	120	86	109	86	97
75	9	109	75	101	81	88
70	10	74	76	67	57	50
65	1	43	34	40	51	45
60	..	18	9	23	21	24
55	..	4	11	1	5	10
50 and below	..	..	1	6	4	8
N.	55	646	485	585	594	608
Mean	83.75	83.30	81.70	82.65	84.25	83.70
S.D.	8.95	11.55	11.05	11.80	13.00	13.15
Number below 70 =	1	65	55	70	81	87
60% number below 70 =	.6	39	33	42	49	52
Percent below 70 =	1	6	7	7	8	9

I.Q.	AGE						
	12	13	14	15	16	17	18
125	..	2	1	..	..	..	..
120	1	..	..	..	..	..	..
115	4	..	..	..	..	..	..
110	3	2	3	..	..	..	..
105	12	7	2	..	..	..	..
100	29	16	8	..	..	..	..
95	39	28	11	3	..	..	..
90	61	38	27	3	3	..	..
85	104	51	33	12	4	1	..
80	98	85	56	8	3	1	1
75	106	80	75	25	4	2	..
70	92	87	83	37	9	4	..
65	54	72	55	34	16	2	1
60	22	34	42	50	20	4	2
55	13	8	11	21	16	5	3
50 & below	4	10	1	7	6	4	2
N.	642	520	408	200	81	23	9
Mean	81.55	78.05	76.55	69.00	66.15	64.60	60.90
S.D.	11.85	12.15	11.10	9.70	10.05	10.00	8.75
Number below 70 =	93	124	109	112	58	15	8
60% number below 70 =	55	74	65	67	35	9	5
Percent below 70 =	9	14	16	33	43	39	55

from 14 at age 13 to 55 at age 18. The standard deviations also range from about 9 to 13. The smallness of the two standard deviations of 9 at ages 6 and 18 is partly due to the fewness of cases.

In the fourth place variations among the children's I. Q.s may be studied by observing tables of distribution (Table 9) based on the occupations of the children's parents. The range of mean

TABLE 9

Arrange of I. Q. Scores According to Occupations of Parents (Negro)

	N	Mean	S.D.	Number Below 70 I.Q.	Percent Below 70 I.Q.
Bakers and Butchers	54	94.8	16.9	2	4
Professional	108	92.0	17.0	7	6
Tailors	10	88.5	14.5	.6	6
Barbers, Beauticians	34	87.3	13.8	2	6
Cleaning, Pressing	32	86.0	18.3	4	12
Carpenters, Painters	49	84.9	12.4	4	8
Railroad Workers	34	83.7	10.7	2	6
Mechanics	30	82.5	13.3	3	10
Salesmen	35	82.3	15.6	4	11
Truck Drivers	70	81.0	12.5	10	14
Laboring Group	354	80.8	13.4	40	11
Factory Workers	2301	80.7	11.8	247	11
Domestic Service	1125	80.3	12.3	126	11
Unemployed	163	79.6	11.8	19	12
Total	4399				

I. Q.s is from 95 which was secured by children of bakers and butchers to 80 secured by children whose parents were unemployed. Contrary to what might be expected the children of the professional group did not lead in mean I. Q. Many of our occupational groups are too few in number to draw any certain conclusions. Other studies have shown that the professional group's children lead the others. For example one student (Canady, 1942) [1] divides his subjects into three groups on the basis of the Sims Score Card which indicated the Socio-Economic level.

I. Q.

N=128, Group I (lowest) =80.6
N=225, Group II (middle) =94.03
N=144, Group III (highest) =98.90

Our data agree with the findings of this study in its major outcomes but disagree slightly with results for Group III.

[1] Canady, Herman C. "The American Caste System and the Question of Negro Intelligence." J. Ed. Psy. 1942—33—161-172.

The tremendous number of Negroes who are laborers, truck drivers, factory workers, or who are engaged in domestic service furnish the schools of Winston-Salem with the large majority of Negro children. For the most part the means of these groups are in the low eighties. On the other hand, from six to ten percent of this group score 100 and above.

TABLE 10
Intelligence Quotients Arranged According to School (Negro)

	N	Mean	S. D.	Number Below I.Q. 70	Percent Below I.Q. 70
Fourteenth Street	1247	82.6	13.6	131	10
Kimberley Park	1269	81.1	12.5	130	10
Skyland	394	80.7	11.2	41	10
Woodland Avenue	614	80.5	12.4	60	10
Columbia Heights Primary	489	80.2	11.5	47	10
Columbia Heights Elementary	818	79.1	12.0	110	13
Total	4831				

The differences in I. Q. among the different schools are displayed in Table 10. Only slight differences appear in the means of the schools (79 to 83). Fourteenth Street School and Kimberley Park School are much larger than the other schools. It will be noted that when so many children are measured in one school the very bright ones are so few that the mean is largely determined by the preponderance of children whose parents are working in occupations classed as "low," socio-economically speaking.

EFFICIENCY OF THE GROUP TESTS

Thus far in our discussion we have simply presented the facts obtained from the testing of more than 10,000 children. The results have been analyzed into grade groups, age groups, occupational groups, and school groups. It has been thought that the facts would speak for themselves. However, certain difficulties inherent in the construction, administration, and interpretation of the tests have frequently intruded upon our thinking. It is for this reason that it seemed necessary to study group-test results by comparing them in certain instances with results secured from the testing of individual children.

One of the outstanding problems in the mind of the investigator was that of the accuracy of the group test in selecting children for special education. For example, a school system wishing to intro-

duce special classes for its backward children desires to know how many pupils really need to be placed in such classes. A problem similar to this motivated Binet to develop the first intelligence tests. Our problem, then, was to discover the accuracy of the group test (a) in detecting the feeble-minded, those below an I. Q. of 70 and, (b) in discovering the borderline and backward.

In carrying out this project 188 children were chosen for study. One group composed of 152 children was selected at random from a large number of children whose scores were below an I. Q. of 70 on the group tests. Another group of 36 cases was chosen in a like manner from those who scored above 70 I. Q. Each of these two groups, 188 children in all, was then tested with the Terman-Merrill Revision of the Binet tests, Form L, by two competent and experienced testers.[1] The scores on the individual tests were the criterion against which we measured the scores secured from each of four group tests.

In the first place, we correlated the I. Q.s received by the 188 children from the four group tests with those received from the individual tests. In the second place, scores from each group test were correlated with those received from the individual test. The results were:

	Terman-Merrill Revision (Form L)		
	N	r	P. E. r
Pintner-Cunningham	52	.77	.04
Pintner-Durost (Pictures)	24	.38	.12
Pintner-Durost (Reading)	36	.46	.09
Pintner-Intermediate	76	.64	.05
Four tests combined	188	.60	.03

Taking our data at face value it is clear that the Pintner-Cunningham test and the Pintner Intermediate agree much more closely with the Terman-Merrill scores than do the Pintner-Durost tests. No inference can be made from these data about the correlations of these tests over the total spread of mental capacity but in this limited variation the Pintner-Durost tests are decidedly below the other two in their agreement with the scores on the individual test. When the records from the four tests are combined a correlation of .60 is secured, a degree of resemblance *too low* for accurate prophecy of the individual score from those secured on the group tests.

Since we were balked in securing accurate prediction of individual I. Q.s from group tests it was thought that in a rougher

[1] Mrs. Mary Martin Huse tested 146 children both Negro and white. Professor George L. Johnson tested 42 of the Negro children. The Terman-Merrill Revision, Form L, was used in all cases.

classification of scores our group tests might be more efficient. Since our major practical problem was to discover the probable number of feeble-minded in a large group it was decided (a) to select those scores which the group test indicated were below an I. Q. of 70 and compute the percentage of these with which the individual test I. Q.s agreed and (b) to compare a number of I. Q.s above 70 on the group tests with their corresponding individual test scores.

Table 11 shows amount of agreement between group tests and individual tests in (a) those scoring below 70 I. Q. on group tests and (b) those scoring above 70 I. Q. on the group tests.

TABLE 11

Shows Agreement of I. Q.s Received in Group Tests With I. Q.s Received on the Individual Test (Terman-Merrill, Form L)

	Number Below 70 I.Q.	Number Not Below 70 I.Q.
Pintner-Cunningham	46	..
Terman-Merrill	32	14
Percent (a) below I.Q. of 70 on both (agreement)	70	..
(b) of disagreement	..	30
Pintner-Durost (Pictures)	22	..
Terman-Merrill	14	8
Percent (a) below I.Q. of 70 on both (agreement)	64	..
(b) of disagreement	..	36
Pintner-Durost (Reading)	26	..
Terman-Merrill	14	12
Percent (a) below I. Q. of 70 on both (agreement)	54	..
(b) of disagreement	..	46
Pintner-Intermediate	58	..
Terman-Merrill	33	25
Percent (a) below I.Q. of 70 on both (agreement)	57	..
(b) of disagreement	..	43
Total (Group Tests)	152	..
Total (Terman-Merrill)	93	59
Percent (a) below 70 on both (agreement)	61	..
(b) of disagreement	..	39

Table 11 indicates a wide difference in the agreement of the group tests and the individual tests in those children whose I. Q.s are below 70. In Pintner-Durost (Reading) there is 54 percent agreement; in Pintner-Cunningham there is 70 percent. Taken as a whole 61 percent of those children scored as below 70 I. Q. on the group tests would also score below 70 I. Q. on the individual test. In twelve other cases the difference between the group test I. Q. and the individual test I. Q. was eight I. Q. points or less but because the scores were near 70 the difference was enough to put them above 70. If these twelve cases were added 69 percent of agreement would have been achieved.

A striking contrast appears in the 36 cases whose scores were *above 70 I.Q. on the group tests, for the two types of tests were alike in 32 cases, or 89 percent agreement.* There was a definite tendency for the Terman-Merrill I. Q. to be higher than the group-test I. Q. In short, if a child's score on a group test is above 70 there is a high probability that he is not below 70 on the individual test.

PROBABLE NUMBER OF MENTAL DEFECTIVES

How well then can we answer our question about the number of feeble-minded or very slow learners present in any school system? Our *experience would say that if good group tests of intelligence are carefully given and scored about 60 percent of the I. Q.s below 70 are definitely below 70 on the individual test and are clearly in need of special treatment.* If we now refer to Table 1 (Page 76) it is seen that 218 white children fall below an I. Q. of 70. Sixty percent of these white children would be 130 children who are in need of special classes. If we included those below 75 twice as many classes would be needed. In Table 6 (Page 82) we find 878 Negro children below an I. Q. of 70. Sixty percent of this number gives 527 cases who need concrete, specific, practical activities in their educational program. In what grades are these children found? Table 2 and 7 show clearly that these backward children are scattered through the eight grades. In the case of the whites from 3 to 5 percent occur in each grade and from 10 to 20 children. Negro children, except for Grade V, according to our records, show about the same evenness of distribution among the grades but with larger numbers in each grade. Outside of Grade V where only 22 children appear the range is from 55 in Grade VI to 88 in Grade VII.

When we examine the distributions of I. Q.s by age (Table 3 and 8) we find in both white and Negro children an increasing

number of backward children with age. With the white children the percent increases from 0 percent at year 6 to 3 or 4 percent at year 13; with the Negroes, the corresponding figures are from 2 percent at age 6 to 14 percent at year 12 and 24 percent at year 13. Above 13 years of age the percentage of children who have I. Q.s below 70 greatly increases. Possibly more to be wondered at is the retarded child of 15 still in Grade VII whose I. Q. is above 100. From the years 12 to 15 there are from 12 to 25 percent of white children and from 55 to 74 percent of Negro children who are most probably feeble-minded or mentally deficient.

There is a strong tendency for a larger number of I. Q.s below 70 to appear in those areas of low socio-economic levels. (Table 4 —for the white and Table 9 for the Negroes.) In our white population no child of professional parents scored below 70, while among the children of factory workers 54 out of 905 were below this point. When we apply our principle of 60 percent to this group we find some 32 children, or more than three percent, were below 70 I. Q. and presumed to be mentally defective. A similar story appears among the Negro children. Among the children of bakers and butchers fewer than two percent fall below 70 while more than ten percent of the children of factory workers fall in this group.

Finally, when individual schools are studied large variations in percent falling below 70 I. Q. are seen. (Table 5 for the whites and Table 10 for the Negroes.) Among the whites the percentage of feeble-minded ranges from .5 of one percent for elementary pupils in Reynolds High to 5 percent in South Park School.

Among the Negro schools, Woodland Avenue showed fewer than 10 percent below an I. Q. of 70 while Columbia Heights showed 13. In general schools score higher or lower in proportion to the socio-economic level of the parents of the children. This is more noticeable in the lower I. Q. levels than in the upper ones though it is true in both cases.

SUMMARY AND DISCUSSION

Group tests of intelligence were administered to more than ten thousand elementary school pupils by one tester. The children were in Grades I-VIII. These test papers were then scored by individuals trained in scoring and were then checked to make the results as accurate as possible. The results computed in terms of I. Q. were tabulated to display variations according to (a) grade, (b) age, (c) occupation of parents and (d) schools. Records

for Negro children and white children were kept separate. Computations were made to discover the number and percent who fell below an I. Q. of 70, a point commonly used in the definition of feeble-mindedness.

In addition to the group tests the Terman-Merrill Revision, Form L, was administered to 188 subjects whose I. Q.s on the group tests were already available. It was thought that this procedure would give us definite information as to what accuracy might be expected from a group test in determining the percentage of those whose I. Q.s fell below 70 which had been determined on the individual test.

The *white* children of our investigation with a median of 98 and a standard deviation of 17 proved to be a representative group. The number falling below an I. Q. of 70 as determined by the group tests was 218 or four percent of the total. This was reduced to 2.4 percent when multiplied by .60 to approximate the Terman-Merrill I. Q. This figure agrees well with other studies as reported by Pintner[1] who quotes 17 reports which vary from .4 of the *British Royal Commission* to 6 percent found in a county in Minnesota. Three percent of the school population were reported by the Cleveland Survey in 1916 as being mentally defective. It is interesting to note that there were as many borderline children (224) as there were all told below the I. Q. of 70 (218) as determined by the group tests. ("Borderline" as here used includes the children whose I. Q.s range from 70-75.)

Since the emphasis in this study was upon the discovery of the very backward children it is well to note that those whose I. Q.s were below 70 were distributed in every grade with only a small variation. The percents below 70 I. Q. were 2 to 3 percent in each grade. When tabulated by age there was a clear indication of increasing numbers of low I. Q.s with increasing age. Ages 6, 7 and 8 had one percent or less. Ages 10, 11, 12 and 13 had two percent below 70 I. Q. However, children with ages from 14-17 furnished a considerable percent of children whose I.Q.s were below 70. As expected the older retarded children are more apt to be dull than the young, bright ones.

When some of the children were classified according to the occupation of their parents it was clearly demonstrated that the higher the socio-economic level of the parents the higher the average I. Q. and the fewer were the children below 70 I. Q. For example, the children of the white professional group had an average

[1] Pintner, Rudolph, *Intelligence testing*, page 337, 1931.

I. Q. of 114 with no child out of 216 below 70. On the other hand, the children of the white workers in tobacco factories (N=905) had an average I. Q. of 94 with 32 children or four percent falling below the I.Q. of 70. Moreover, the children of managers (N=159) scored an average I. Q. of 107 with only one child falling below 70, while the children of truck drivers received an average I. Q. of 90 with six percent of their number below an I. Q. of 70.

A similar story is told when the different elementary schools are considered in the light of their children's intelligence scores. The 575 children of the Ardmore School earned an average I. Q. of 106 with only one child below 70. On the other hand the 365 children of South Park School earned an average of 92 I. Q. with 17 children of 5 percent below the I. Q. of 70. Or again, the 884 children of the Wiley School received an average I. Q. of 105 with only 14 or two percent below 70, while the 356 children of the Granville School had an average I. Q. of 95 with 12 or 3 percent below the I. Q. of 70. In general, the I. Q.s of these children differ in proportion as the levels of socio-economic status differ in their parents.

The records of the 4856 *Negro* elementary school children tell a similar story. In general, their scores on our tests are low because they as a whole occupy low socio-economic levels. Those Negroes who have higher socio-economic levels produce children whose I. Q.s approach those of the whites. The facts themselves tell an interesting story. The average I. Q. of the nearly five thousand is 81 and the percent below an I. Q. of 70 is 11. More than 2000 children fall between 70 and 80 I. Q. Five hundred and twenty-six children fall below an I. Q. of 70. One gains immediately the impression that the test was not fair to them or that the fact that the tester was white could have made some difference. Most certainly, Negro children are penalized on account of the language factor. Those whose I. Q. fell below 70 are pretty evenly distributed throughout the grades. Except for Grade V where there are 4 percent in this group the percents in each grade vary from 9 to 14. Like the white children the number of low I. Q.s increases with age. From ages 7 through 12 the percentages below 70 vary from 6 to 9. After year 13 these children below 70 I. Q. increase in percentages until they reach 55 at age 18. Out of 200 children at age 15, 67 or 33 percent are below the I. Q. of 70.

When the elementary Negro school children are tabulated according to the occupations of their parents their I. Q. scores show considerable variations. For example the 54 children whose parents were butchers or bakers had an average I. Q. of 95 with 4

percent below an I. Q. of 70. On the other hand, out of 1125 children whose parents were engaged in domestic service 11 percent were below the I. Q. of 70 and their average I. Q. was 80. The children of those engaged in professional work (N=108) received an average I. Q. of 92 with 6 percent below 70 I. Q., while the 2301 children whose parents worked in factories received an average I. Q. score of 81 and 247 or 11 percent fell below the I. Q. of 70.

The difference between schools was not so large as was the case with the whites. Their means varied only from 79 to 83 and the percents below 70 from 10 to 13 with most of them being 10.

The second question raised concerned the efficiency of the group test carefully administered and accurately scored as an indicator of the number of children below 70 I. Q. One hundred eighty-eight subjects were tested with the Terman-Merrill Revision, Form L, after they had taken the group tests. Correlations were computed between the I. Q.s obtained (a) on the group tests and (b) on the individual tests. For the whole 188 cases this coefficient was .60. When the scores from different group tests were compared with individual test scores the coefficients of correlation varied from .38 to .70. Since our especial interest was related to the backward and feeble-minded or mentally defective computations were made with (a) pupils who scored below 70 I. Q. and (b) pupils who scored above 70 I. Q. It was found that if a group test in a certain population listed a hundred pupils below 70 I. Q. sixty of them would fall below 70 I. Q. on the Terman-Merrill Revision, an individual test. Sixty-eight percent were well tested by the group test.

If a group test finds that 100 pupils are above 70 I. Q., 89 percent are above that point on the individual test. This result is not so certain since it was based on only 36 cases.

The low capacity children score lower on the group test because they grow discouraged and won't try; they are poor in vocabulary or reading, or because they fail to understand instructions. The individual test by avoiding these errors can give a more precise measurement of the child's capacity. All percentages of those falling below 70 I. Q. as computed on the group tests were computed from 60 percent of the total number. Thus, if out of 500 cases the group test showed 30 below 70 I. Q. the percentage was not taken as 6 but the 30 was first multiplied by .60 to conform to the results from the individual tests and then divided by 500. In brief .60 x 30 or 18 was divided by 500 giving 3.6 percent.

CONCLUSION

This study, aside from its service feature in providing a survey of the intelligence of more than ten thousand children, has demonstrated certain very definite facts:

(1) It has shown that *group tests* of intelligence may be definitely utilized to discover the total number of children whose I. Q.s are below 70 and who may presumed to be feeble-minded or mentally deficient. Sixty percent of these as designated by the group test have been shown to be deficient according to our best criterion of this fact, the individual test. *The group tests can not be used to determine finally the low I. Q. in the individual case. It is an effective instrument for screening out those children who are in need of further study.* The final decision as to mental defect must come from the consideration of other factors also. The child's record in the classroom, the judgment of teachers, and the individual test would have to be used for the final decision in the case of the single child. The group test can be of practical aid in informing an administrative officer, of the number of children of very low intelligence in his school system. For example, our investigation points out clearly that a large number of children in the city of Winston-Salem are below an I. Q. of 70. These children are in dire need of special programs of instruction. They will have great difficulty in mastering abstract or general material and will be most successful with the concrete and practical materials of education.

(2) It has been demonstrated that many of the Negro children who now live in Winston-Salem fall below an I. Q. of 70. These children probably even more than the comparable group of whites need manual and industrial arts and concrete materials in their courses of study.

(3) It has been shown, though not so certainly, that children who score above the I. Q. of 70 on the group test are very apt to be above that point on the individual test.

The Educational Testing Service

The testing offices of the College Entrance Examination Board, the Graduate Record Office of the Carnegie Foundation, and the American Council on Education (including the Cooperative Test Service and the ACE Psychological Examination) have been merged to form a new organization, the Educational Testing Service. The new organization received its charter as a non-profit corporation under the Education Law of the State of New York on December 19, 1947. Each of the parent organizations had assigned to the ETS the greater part of its current assets; in addition, the Carnegie Corporation of New York has made to the ETS a grant of $750,000.

The Educational Testing Service (ETS) aims first of all to coordinate, strengthen, and improve the testing services which were supplied by the three parent organizations. Basic to this end are the exploration of undeveloped areas in the field of educational testing, the development of new tests as needed, and the carrying out of fundamental research. In addition, emphasis will be placed on advisory and consulting services to schools and colleges, for the most effective use of test resources and results. The ETS will also serve as a unified technical or operating agency which can, on request, supply testing and measurement services to the Government or to other groups.

The ETS aims to be constantly sensitive to the needs and desires of educational institutions at all levels. On the other hand, the new organization has no thought of competing with testing work which is already being done effectively by others. The ETS will not interfere with the non-testing activities of the organizations which brought it into being. The American Council on Education, for example, will continue to study broad problems in measurement and the school curriculum. Likewise, the College Entrance Examination Board, as an organization responsible for general policy in the college-entrance field, will continue to specify the examinations which it requires, and set the examination dates and fees.

The ETS is governed by a Board of Trustees which consists of twelve members (three *ex officio,* nine appointed). The *ex officio* members are Dr. George F. Zook, President of the American Council on Education; Dr. Edward S. Noyes, Chairman of the

College Entrance Examination Board; and Dr. Oliver C. Carmichael, President of the Carnegie Foundation for the Advancement of Teaching. Each of the *ex officio* members has appointed three other trustees to the initial Board. At the first meeting of the Board of Trustees, Mr. Henry Chauncey was appointed President of the ETS. For the present, Mr. Chauncey is serving also as Director of the College Entrance Examination Board.

Although no sudden changes in programs or procedures are to be expected, plans are now being laid for the eventual centralization and integration of the testing activities of the three parent groups. After this is completed, the ETS should be in an excellent position to make important contributions in its own right to American education, for the combined resources of the three constituent groups, together with the generous grant from the Carnegie Corporation, will make the ETS a far stronger organization than any of the testing offices from which it was formed.

The ETS will maintain offices in New York City, Princeton, N. J., Berkeley, Calif., and eventually in other parts of the country. At present inquiries may best be addressed to the Educational Testing Service, Box 592, Princeton, New Jersey.

The National Audubon Society is conducting a series of two-week summer field courses at cost in Maine and Connecticut. At the Audubon Nature Camp in Maine opening June 11th for its *tenth season* there will be five two-week sessions. The camp is located on a 330 acre spruce covered island at the head of Muscongus Bay, 60 miles northeast of Portland, Maine. Campers learn at first hand how plants and animals live, about the conservation of wildlife and other natural resources and how to teach nature appreciation and conservation in schools, clubs, and camps. The Audubon Nature Center at Greenwich, Connecticut, one hour from New York City, will have three two-week Conservation Workshop sessions in 1948. Here students learn how plants and animals live, their interrelationships and dependence on soil and water, ways of teaching nature appreciation and conservation, with practical solutions to conservation problems. For illustrated folders giving full details write to Field Sessions Department, National Audubon Society, 1000 Fifth Avenue, New York 28, N. Y.